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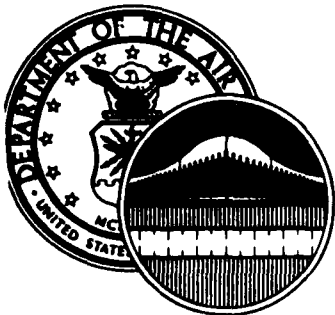
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# OCCUPATIONAL SURVEY REPORT

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TRAINING REPORT  
AIRLIFT/BOMBARDMENT AIRCRAFT  
MAINTENANCE SPECIALTY

AFSC 431X2  
AFPT 90-431-371  
JANUARY 1982

OCCUPATIONAL ANALYSIS PROGRAM  
USAF OCCUPATIONAL MEASUREMENT CENTER  
AIR TRAINING COMMAND  
RANDOLPH AFB, TEXAS 78150

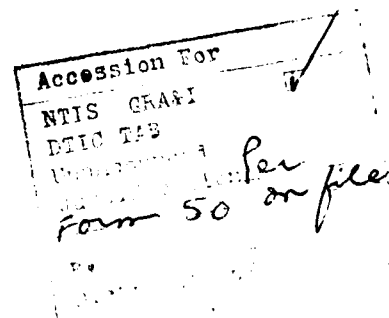
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## PREFACE

This report presents the results of a detailed Air Force Occupational Survey involving the training requirements for first-term airmen in the Airlift/Bombardment Aircraft Maintenance (AFS 431X2) specialty. The project was undertaken at the request of Headquarters Air Training Command and Sheppard Technical Training Center (STTC), and was directed by USAF Program Technical Training, Volume 2, dated October 1978. Authority for conducting occupational surveys is contained in AFR 35-2. Computer printouts from which this report was produced are available for use by operational and training officials.

CMSgt Robert M. Wing, Inventory Development Specialist, developed the survey instrument for this project. Captain James H. Gilbert analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center.

Copies of this report are distributed to the organizations shown on page i. Additional copies may be obtained by contacting the USAF Occupational Measurement Center, attention to the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150.

This report has been reviewed and is approved.

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## SUMMARY OF RESULTS

1. Survey Objective: The purpose of this report is to provide occupational survey data to use in assessing current aircraft maintenance training documents and programs involving first-enlistment 431X2 personnel.
2. Survey Coverage: Training emphasis ratings were collected from senior 431X2 technicians by aircraft system to help identify both common and aircraft-specific training requirements.
3. Training Analysis: Survey data highlighted some common first-term 431X2 maintenance functions appropriate for Phase I Able Chief training. A comparison of data for different airlift and bombardment groups also provided information on what tasks instructors should teach in Phase II courses. In addition, this analysis indicated that field training detachments (FTD) or OJT programs may be more relevant for training tasks which are unique to specific maintenance jobs.
4. STS 431X2: Although the 431X2 specialty training standard provides good coverage of most functions, training managers should consider placing specific emphasis on the maintenance of non-powered AGE and -21 support equipment. A thorough review of both common and aircraft-specific data is also needed to ensure the most appropriate training methods are used when preparing individuals for their jobs.
5. POI 431X1/X2: Phase I course managers should review AFS 431X2 data matched to the 431X1/X2 Plan of Instruction to see that training is applicable to both AFS 431X1 and 431X2 incumbents. Survey data indicate some tasks currently taught in the Phase I course may be trained more effectively through FTD or OJT programs, while several 431X2 tasks would be more relevant to resident training if the course were channelized.
6. Discussion: The survey data in this report and the attached 431X2 Training Extract provide information for general aircraft, specific aircraft, and special maintenance job functions, and have broad applications for Phase I, Phase II, follow-on FTD, and OJT training programs. Headquarters Air Training Command Staff and Able Chief training personnel have already used survey data to develop a new tentative 431X2 STS. Because of the complex training structure of the 431X2 specialty, survey data can be very valuable in assessing and coordinating training requirements to develop a fully integrated training program.

TRAINING REPORT  
AIRLIFT/BOMBARDMENT AIRCRAFT MAINTENANCE SPECIALTY  
(AFSC 431X2)

INTRODUCTION

This is a report of an occupational survey of the Airlift/Bombardment Aircraft Maintenance specialty (AFSC 431X2), completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in January 1982. Training management personnel from the Career Field Training (ATC/TTQJ) and Aerospace Systems Training (ATC/TTYA) sections at Headquarters Air Training Command and from Sheppard Technical Training Center (STTC) requested this survey to provide occupational data to use in assessing current aircraft maintenance training documents and programs involving first-enlistment 431X2 personnel.

Background

Members of the 431X2 specialty receive their 3-skill level upon completion of Phase I and II Able Chief training. During the initial training phase, AFS 431X1 and 431X2 personnel attend a common four-week course at Sheppard AFB TX, which provides orientation training on aircraft maintenance fundamentals, aircraft systems, maintenance documentation, aircraft and flightline safety, technical orders, aerospace ground equipment, corrosion control, and aircraft ground handling. Following their basic orientation training at Sheppard, aircraft maintenance personnel receive Phase II aircraft-specific training at designated FTDs.

Objectives

Since training for first-term 431X2 airmen involves aircraft-specific as well as a general formal training course, this report provides task data which training managers can use in conjunction with career ladder documents to assess the effectiveness of both phases of maintenance training. Topics discussed in this report include: (1) survey development and administration; (2) representative tasks performed by first-enlistment 431X2 personnel; (3) comparison of aircraft related differences; and (4) assessment of the 431X2 STS and the 431X1/X2 POI.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory, AFPT 90-431-371, which contains both AFS 431X1 and 431X2 task statements. A tentative task list was developed after reviewing previous aircraft maintenance inventories and researching applicable career field publications and directives. The task list was then validated in the field through

personal interviews with 50 subject matter specialists (senior 7-skill level technicians) from five bases. This process resulted in a final inventory of 1,045 tasks and a background section that included information about the respondents, such as grade, AFMS, duty title, aircraft system, and job interest.

### Job Inventory Administration

During the period April through October 1980, consolidated base personnel offices in operational units worldwide administered the job inventory to a stratified random sample of job incumbents holding a DAFSC of 431X1 or 431X2. Respondents were selected from a computer generated mailing list obtained from historical AFMPC personnel data tapes which the Air Force Human Resources Laboratory (AFHRL) maintains.

Inventory respondents first completed an identification and biographical information section and then checked each task performed in their current job. Respondents also rated each task they perform on a nine-point scale indicating the relative time spent on the task as compared to all other tasks checked. This information was used to compare personnel based on the type of tasks they perform and the relative amount of time they spend performing the tasks. Job inventory data provided the basis for analyzing the job structure of the 431X1 and 431X2 specialties and making comparisons between DAFSC groups, CONUS-overseas groups, and job satisfaction indicators. A summary of the analyses of the data is presented in the Occupational Survey Report (OSR) for the Tactical and Airlift/Bombardment Aircraft Maintenance Specialties, AFPT 90-431-371, dated June 1981.

### Task Factor Administration

In addition to using the job inventory to obtain first-enlistment task performance data, task difficulty (TD) and training emphasis (TE) booklets were also administered to selected 43172 personnel to obtain objective data which can be used to determine training needs. Although the tasks in the task factor booklets are identical to those listed in the job inventory, the task difficulty and training emphasis booklets are processed separately from the job inventories. A brief explanation of these rating factors and their application is provided below.

Task Difficulty. Each senior NCO completing a task difficulty booklet was asked to rate all familiar tasks on a nine-point scale from extremely low to extremely high as to the relative difficulty of that task. Difficulty is defined as length of time it requires an average member to learn to do that task. Task difficulty data were collected independently from 94 experienced 431X2 personnel stationed worldwide. The interrater reliability (as assessed through components of variance of standard group means) for these raters was .97, which reflects exceptionally high agreement among the raters. Ratings were adjusted so that tasks of average difficulty have ratings of 5.00. The result of the data obtained from the 431X2 raters is a rank ordered listing of tasks based on the relative degree of difficulty assigned each task in the inventory.

Training Emphasis. Training emphasis booklets were administered to DAFSC 43172 personnel from April through October 1981. The 325 senior NCOs who completed the training emphasis booklets were asked to rate only tasks applicable to the aircraft system the rater currently maintains. Ratings range from zero (no training emphasis required) to nine (extremely high training emphasis required). Training emphasis ratings provide an indication of how much emphasis should be placed on structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, FTDs, Mobile Training Teams (MTT), formal OJT, or any other organized training method.

As indicated by the survey administration dates, distribution of training emphasis booklets was delayed to identify which 7-skill level incumbents were best qualified to provide ratings on a specific aircraft system. Data presented in the Tactical and Airlift/Bombardment OSR (June 1981) indicated 43172 technicians perform a variety of diverse jobs, some of which do not require actual experience on a specific aircraft. This finding, coupled with the objective to provide data for Phase II FTD training programs, led to a strategy of administering training emphasis booklets through maintenance supervisors in Organizational Maintenance Squadrons. This procedure allowed the maintenance supervisor to identify qualified respondents who have experience on a specified aircraft and also supervise personnel working on that aircraft. Special emphasis was placed on having flight chiefs or senior crew chiefs complete the booklets.

Since incumbents rated tasks only for the aircraft they maintain, separate reliability coefficients were computed to determine the amount of agreement among respondents for each aircraft, as well as for the combined 431X2 sample. Training emphasis was obtained from senior DAFSC 43172 NCOs who work on the following aircraft: B-52, C-5, C-9, C-130, C/KC-135, C-141, T-39, and T-43. Training emphasis data were also gathered from 7-skill level aircraft repair and reclamation personnel who maintain both B-52 and KC-135 aircraft. With the exception of the C-9 and T-43 respondents, agreement was found among the raters for each aircraft group. The high reliability coefficient for the combined set of raters also indicates agreement on many survey tasks. Because of the similarity in rating policies, the training emphasis ratings not only provide data to help assess FTD requirements, but also can help identify tasks which should be trained at a common 431X2 school.

Like task difficulty, training emphasis ratings provide objective information which should be used along with percent members performing data when making training decisions. Percent members performing data provide information on who and how many personnel perform the tasks. Task difficulty ratings help make decisions on which tasks may require more training time, and training emphasis indicates what tasks should be considered for formal training programs. Using these factors in conjunction with appropriate training documents and directives, career field managers can tailor training programs to accurately reflect the needs of the user by more effectively determining when, where, and how to train first-enlistment 431X2 airmen.

### Survey Sample

As indicated above, the administration of the AFS 431X1/431X2 Job Inventory, task difficulty booklet, and training emphasis booklet involved three separate survey samples. Ninety-four 43172 technicians provided difficulty ratings for the task which first-enlistment Airlift/Bombardment Aircraft Maintenance personnel perform. Table 1 provides the sample size for the first-term 431X2 aircraft groups, as well as the number of training emphasis raters for each aircraft system. Because of the low number of first-enlistment C-9 and T-43 personnel identified and the low agreement among the training emphasis respondents for both aircraft, information on these aircraft is not presented in this report.

TABLE 1  
SAMPLE DISTRIBUTION OF AIRCRAFT SURVEYED

<u>AIRCRAFT</u>	<u>FIRST ENLISTMENT PERSONNEL*</u>	<u>TRAINING EMPHASIS RATERS</u>
B-52	231	68
C-5	93	48
C-9	7	7
C-130	170	42
C-135	328	63
C-141	181	52
T-39	37	39
T-43	6	9
R&R+	13	25

\*NOTE: FIRST-ENLISTMENT AIRCRAFT GROUPS DO NOT INCLUDE PERSONNEL WHOSE PRIMARY WORK SECTION INVOLVES PERFORMING NON-POWERED AEROSPACE GROUND EQUIPMENT (AGE), -21 SUPPORT EQUIPMENT, TOOL ROOM, BENCH STOCK, TRANSIENT MAINTENANCE, OR ADMINISTRATIVE FUNCTIONS. BY EXCLUDING PERSONNEL IN THE ABOVE WORK AREAS, PERCENT MEMBERS PERFORMING DATA PROVIDE MORE RELEVANT TASK INFORMATION FOR EACH AIRCRAFT TYPE.

+DATA REFLECT FIRST-ENLISTMENT AND RATER INFORMATION FOR B-52/KC-135 AIRCRAFT REPAIR AND RECLAMATION INCUMBENTS.

## TRAINING ANALYSIS

A primary concern for managers of any specialty involves developing the most efficient and cost-effective training programs where career ladder incumbents learn to perform the jobs required of them. Occupational survey data provide a valuable source of objective information which managers can use to make training more meaningful and relevant to the students. Information provided in this report which can be used to assess training requirements includes percent of 431X2 first-enlistment respondents performing tasks, training emphasis data, and task difficulty ratings. Although this information is useful in evaluating training needs for various skill level and experience (TAFMS) groups within the 431X2 specialty, this report places emphasis on first-term Airlift/Bombardment Aircraft Maintenance personnel to provide data for assessing Phase I and II Able Chief training programs.

### Analysis of First-Enlistment Personnel

An analysis of jobs and tasks performed by respondents with 1-48 months TAFMS (first-enlistment) was made to determine the basic functions personnel entering the 431X2 specialty perform. First-enlistment information was used instead of 3-skill level data because the 43132 sample is small due to the short time required to upgrade to the 5-skill level. Since tasks which AFSC 43132 airmen perform are not completely representative of the diverse jobs which 3-skill level personnel may perform following Able Chief training, 431X2 first-enlistment groups provide more appropriate target groups to use in identifying training needs.

Some of the more common first-term 431X2 tasks are presented in Table 2. Most of these tasks involve servicing and inspecting aircraft systems and equipment, ground handling of aircraft, operating aerospace ground equipment (AGE), and annotating maintenance forms--functions which are typically performed by flightline maintenance personnel. Overall, 127 tasks were performed by 30 percent or more of the first-enlistment respondents. Tasks in Table 2 are also typical of functions which some of the larger job groups identified within the OSR for the Tactical and Airlift/Bombardment Aircraft Maintenance Specialties (June 1981) perform. Because these types of functions are common to many job groups and to different aircraft types, they are excellent examples of tasks which should be considered for general maintenance training.

Figure 1 displays the distribution of first-term incumbents across functional job groups identified in the Tactical and Airlift/Bombardment Aircraft Maintenance OSR. As indicated by Figure 1, most respondents perform maintenance related activities (i.e., Ground Crew Member, 431X2 Crew Chief, Inspection, and Specialized Maintenance job groups). Approximately 13 percent are assigned to either Management/Administration or Support Equipment related jobs which are not oriented toward performing aircraft maintenance or servicing functions.

Although most first-term jobs involve physical maintenance of a specific aircraft, individuals working in the following areas deserve attention because many of their tasks are unique: Repair and Reclamation, Non-powered AGE, -21 Support Equipment, and Supply Custodians. Tasks which are characteristic of these groups are listed below.

#### Repair and Reclamation

- remove or install flaps
- jack aircraft using tripod jacks
- remove or install flight control cables
- remove, install, or adjust flight control push-pull rods
- remove or install flight control rig pins
- adjust flight control cable tension
- adjust flight control actuator end rods
- remove or install flight control cable pulleys
- remove or install flap jack screws
- adjust landing gear steering system components

#### Non-powered AGE

- lubricate non-powered AGE
- perform periodic inspection on non-powered AGE
- maintain maintenance stands
- perform corrosion control on non-powered AGE
- maintain towing equipment other than vehicles
- maintain maintenance trailers or dollies
- maintain hydraulic servicing carts
- maintain waste oil or contaminated fuel bowzers
- tow non-powered AGE
- maintain LOX servicing carts
- perform minor maintenance on LOX carts, such as tightening screws or bolts
- service hydraulic servicing carts
- maintain gaseous oxygen servicing carts
- maintain aircraft jacks
- maintain oil servicing carts

#### -21 Support Equipment

- stow -21 support equipment
- pick up or deliver -21 support equipment
- inspect -21 support equipment
- maintain cargo compartment seats or litters
- perform minor maintenance on -21 support equipment, such as tightening screws or bolts
- rig or de-rig cargo compartment seats or litters
- pack or unpack -21 support equipment
- maintain cargo loading winches
- remove or install seatbelts or shoulder harnesses
- perform corrosion control on -21 support equipment

### Supply Custodians

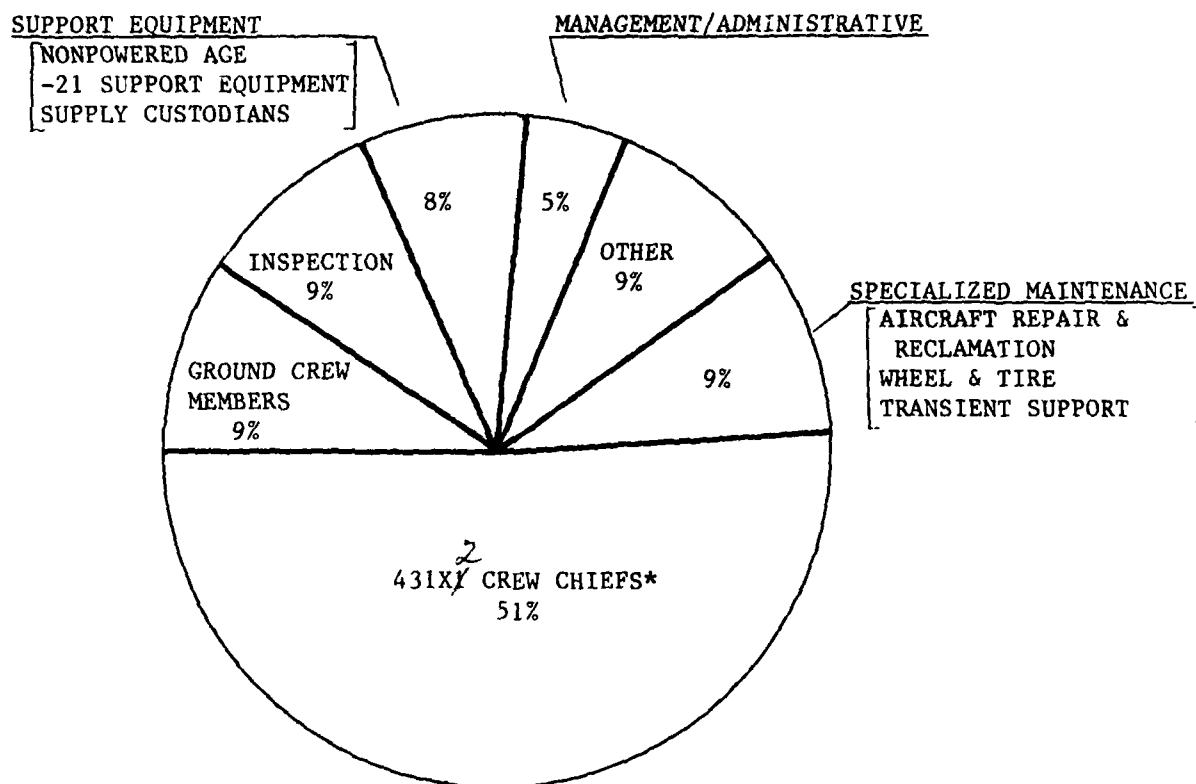
- inventory supplies, equipment, or tools
- maintain tool cribs
- maintain benchstock parts or equipment levels
- order parts by voice communication
- annotate temporary Issue Receipt (AF Form 1297)
- maintain Daily Document Register and Item Surveillance lists (D04)
- verify Due-In from Maintenance (DIFM) document listings (R-26)
- annotate Reparable Item Processing Tag (AFTO Form 350)

Since the above tasks are performed primarily by specific job groups involving small portions of 431X2 incumbents, these functions probably can be trained more effectively through special FTD or OJT training.

Understanding the job functions of first-enlistment personnel provides insight into how to make the best use of common training time and resources. When considering generic aircraft maintenance functions, however, training managers must also have knowledge of specific aircraft differences to evaluate whether a task can be trained more effectively during Phase I or Phase II courses or in some other training environment, such as OJT. To assist training personnel in making these decisions, the next section discusses first-term airmen with respect to the type of aircraft they maintain and highlights some differences between 431X2 aircraft systems.

FIGURE 1

DISTRIBUTION OF AFS 431X2 FIRST-ENLISTMENT PERSONNEL ACROSS  
FUNCTIONAL JOB GROUPS



\*INCLUDES AFSC 431X2 FIRST-TERM PERSONNEL (2%) IDENTIFIED  
IN THE AIRCRAFT MECHANIC JOB GROUP

TABLE 2  
COMMON TASKS PERFORMED BY FIRST-ENLISTMENT  
431X2 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
I422 OPERATE MAINTENANCE STANDS	76
I450 WALK WINGS OR TAILS DURING TOWING OPERATIONS	73
J485 INSPECT TIRES	73
I425 OPERATE PORTABLE LIGHTING EQUIPMENT	73
H234 INSPECT ACCESS PANELS	70
I438 SERVICE ENGINE OIL	69
H310 REMOVE OR INSTALL AIRCRAFT HARDWARE, SUCH AS SCREWS OR FASTENERS	69
I403 GROUND AIRCRAFT	69
I402 FUEL AIRCRAFT USING SINGLEPOINT METHODS	69
I448 STAND FIREGUARD	69
I447 SERVICE TIRES	69
I410 MARSHAL AIRCRAFT	68
I431 POSITION AGE TO AIRCRAFT	66
I439 SERVICE HYDRAULIC SYSTEMS	66
H303 REMOVE OR INSTALL ACCESS PANELS	65
I449 TAKE ENGINE OIL SAMPLES	65
H281 LUBRICATE AIRCRAFT COMPONENTS	64
H233 INSPECT ACCESS DOORS OR HATCHES	64
I391 DEFUEL AIRCRAFT USING SINGLEPOINT METHODS	64
N770 REMOVE OR INSTALL LIGHT BULBS	63
I418 OPERATE GROUND HEATERS	63
H237 INSPECT AIRCRAFT EMERGENCY EQUIPMENT FOR AVAILABILITY, SUCH AS FIRST AID KITS, TOOLS, OR FIRE EXTINGUISHERS	60
E150 ANNOTATE MAINTENANCE DATA COLLECTION RECORD (AFTO FORM 349)	60
J481 INSPECT LANDING GEAR STRUTS	60
N768 REMOVE OR INSTALL BATTERIES	59
I424 OPERATE PORTABLE GENERATORS	58
H239 INSPECT AIRFRAME STRUCTURES	58
E135 ANNOTATE AFTO FORM 781K, AEROSPACE VEHICLE INSPECTION, ENGINE DATA, CALENDAR ITEM INSPECTION AND DELAY DISCREPANCY DOCUMENT	58
E133 ANNOTATE AEROSPACE VEHICLE FLIGHT STATUS AND MAINTENANCE DOCUMENT (AFTO FORM 781H)	56
I441 SERVICE OXYGEN SYSTEMS WITH LIQUID OXYGEN	56

### Analysis of First-Enlistment Aircraft Groups

In addition to the analysis of task performance across all first-enlistment 431X2 personnel, a comparison was also made to identify tasks which distinguish aircraft groups. While the common 431X2 tasks presented in the previous section highlight some functions for Phase I training, tasks such as those discussed in this section are aircraft related and should be considered primarily for Phase II Able Chief or OJT training.

Tables 3 and 4 list some of the tasks that differentiate 431X2 first-enlistment personnel who are responsible for inspecting, servicing, and maintaining the following types of aircraft: B-52, C/KC-135, C-5, C-130, C-141, and T-39. These first-enlistment aircraft maintenance groups include respondents who perform flightline maintenance, inspection, and aircraft repair and reclamation functions, but do not contain personnel whose primary job involves performing non-powered AGE, bench stock, tool room, -21 support equipment, administrative, or transient maintenance functions. Therefore, the percent members performing data presented in Tables 4 and 5 provide more relevant task information for individuals working on each aircraft type.

As indicated in Table 3, tasks involving bomb bay doors, drag chutes, ejection systems, and inflight refueling equipment distinguish B-52 aircraft maintenance personnel. While the bomb bay door, drag chute, and ejection system tasks are unique to the B-52, other 431X2 aircraft (i.e., C-5 and C-141) have the capability to be refueled inflight. Data reveal, however, that few first-term maintenance respondents assigned to other refuelable aircraft actually inspect inflight refueling equipment. In addition to the aircraft-specific tasks which distinguish B-52 personnel, some differences were also noted when comparing B-52D and B-52G/H respondents. Higher percentages of the B-52D respondents performed tasks such as servicing alternator or generator drives, operationally checking hydraulic system power packs, and servicing air-conditioning systems. In contrast, B-52G/H maintenance personnel were more likely to inspect nickel-cadmium batteries, remove or install crew entrance doors, and service hydraulic servicing carts.

Both bomber and tanker personnel place emphasis on the maintenance of cartridge type starters and the removal and installation of engine nose domes. Other functions which differentiate KC-135 maintenance personnel include inspecting and servicing landing gear systems and maintaining inflight refueling boom equipment.

With the exception of some unique functions which distinguish first-term C-5 and C-130 maintenance respondents, there were only a few tasks which readily differentiate first-term airlift aircraft maintenance groups. As expected, tasks involving cargo ramps and doors, troop doors, and life rafts are more typical of personnel who maintain cargo aircraft. A comparison of the three cargo aircraft groups revealed greater similarity in task performance between C-5 and C-141 maintenance personnel than between either of these groups and the C-130 respondents. Tasks which are peculiar to the C-5 include inspecting and operationally checking forward cargo compartment systems. The C-141 personnel, on the other hand, do not perform any unique functions. Although tasks such as inspect or operationally check air

deflector doors and inspect propellers distinguish C-130 personnel, most of their differentiating tasks are similar to those which either C-5 or C-141 incumbents perform. First-enlistment C-130 maintenance personnel, however, do perform an average of 189 tasks, 32 more than individuals working on the C-5 or C-141.

Like respondents in the C-130 sample, T-39 incumbents also perform a broad job, averaging 183 tasks. Some of their discriminating tasks include inspecting slat and flight control trim systems, servicing oxygen system with high-pressure gaseous oxygen, operating tow vehicles during aircraft towing operations, and removing or installing tail cones or wing tips.

Tasks which distinguish these first-enlistment groups are primarily a function of aircraft system or structural differences. Functions such as those above also contributed to the distinct aircraft groups identified in the JOB STRUCTURE ANALYSIS section of the OSR for the Tactical and Airlift/Bombardment Aircraft Maintenance Specialties (June 1981). Although some aircraft differences are readily apparent, the extent to which these aircraft differ for training purposes requires a more detailed task analysis. This analysis should include a review of task difficulty and training emphasis data. Differences in equipment location and technical order specifications may further accentuate the need for aircraft-specific training.

TABLE 3

EXAMPLES OF TASKS WHICH DIFFERENTIATE FIRST-ENLISTMENT AIRCRAFT GROUPS  
(PERCENT MEMBERS PERFORMING)

TASKS	B-52 (N=231)	C/KC-135 (N=328)	C-5 (N=93)	C-141 (N=181)	C-130 (N=170)	T-39 (N=37)
I433 REMOVE OR INSTALL DRAG CHUTES	82	-	-	-	-	-
H315 REMOVE OR INSTALL BOMB BAY DOORS	70	-	-	-	-	-
I401 FUEL AIRCRAFT USING OVERWING REFUELING SYSTEMS	70	16	-	13	39	49
X1029 INSPECT IFR DOORS	70	20	13	-	-	-
R864 CLEAN CARTRIDGE TYPE STARTER BREECH CAPS	69	60	-	-	-	-
X1032 INSPECT IFR RECEPTACLES	67	24	-	-	-	-
H246 INSPECT DRAG CHUTE SYSTEMS	67	-	-	-	-	-
R871 INSPECT CARTRIDGE TYPE STARTER BREECH CAPS	67	61	-	-	-	-
R920 REMOVE OR INSTALL NOSE DOMES	61	59	-	37	-	-
H242 INSPECT BOMB BAY DOOR SYSTEMS	54	-	-	-	-	-
H247 INSPECT EJECTION SYSTEMS	43	-	-	-	-	-
J478 INSPECT LANDING GEAR SNUBBERS	10	71	31	13	32	11
J536 SERVICE LANDING GEAR SNUBBERS WITH HYDRAULIC FLUID	-	61	-	-	-	-
J476 INSPECT LANDING GEAR LEVELING CYLINDERS	-	50	19	25	-	-
X1028 INSPECT IFR BOOMS	-	46	-	-	-	-
X1033 OPERATIONALLY CHECK IFR BOOM SIGHTING WINDOWS	-	46	-	-	-	-
H248 INSPECT FORWARD CARGO VISOR OR RAMP SYSTEMS	-	-	68	17	-	-
K605 SERVICE ATMs	-	-	61	-	28	-
H291 OPERATIONALLY CHECK FORWARD CARGO VISORS OR RAMPS	-	-	60	14	-	-
J484 INSPECT NOSE GEAR FOLDING BULKHEAD SYSTEMS	-	-	56	21	-	14
H244 INSPECT CARGO COMPARTMENT PRESSURE DOOR SYSTEMS	-	21	64	71	40	19
H288 OPERATIONALLY CHECK CARGO COMPARTMENT PRESSURE DOORS	-	24	60	70	24	-
M698 INSPECT HYDRAULIC SYSTEM FILTERS	22	12	43	54	41	22

-LESS THAN TEN PERCENT PERFORMING

TABLE 4

EXAMPLES OF TASKS WHICH DIFFERENTIATE FIRST-ENLISTMENT AIRCRAFT GROUPS (CONTINUED)  
(PERCENT MEMBERS PERFORMING)

TASKS	B-52 (N=231)	C/KC-135 (N=328)	C-5 (N=93)	C-141 (N=181)	C-130 (N=170)	T-39 (N=37)
H236 INSPECT AIR DEFLECTOR DOORS	-	-	12	22	81	14
H261 INSPECT TROOP DOOR SYSTEMS	-	-	47	61	78	-
H283 OPERATIONALLY CHECK AIR DEFLECTOR DOORS	-	-	-	16	77	-
H344 REMOVE OR INSTALL LIFE RAFTS	-	16	40	56	76	-
H372 REMOVE OR INSTALL WING LEADING EDGES	-	11	20	57	76	24
I411 MOOR AIRCRAFT	-	10	13	26	73	19
N774 SERVICE BATTERY SUMP JARS	-	-	-	41	69	59
H297 OPERATIONALLY CHECK TROOP DOOR SYSTEMS	-	-	27	54	68	-
I573 OPERATIONALLY CHECK BLEED AIR SYSTEMS	13	11	31	28	67	11
H263 REMOVE OR INSTALL TROOP DOOR NEGATOR SPRINGS	-	-	17	39	59	-
R888 INSPECT PROPELLERS	-	-	-	-	51	-
H258 INSPECT SEXTANT OR FLARE PISTOL MOUNTS	-	13	15	27	51	11
L634 INSPECT SLAT SYSTEMS	-	-	34	-	-	95
I440 SERVICE OXYGEN SYSTEMS WITH HIGH PRESSURE GASEOUS OXYGEN	14	50	11	11	17	92
H227 BRIGHTEN AIRCRAFT SURFACES	22	29	11	12	22	86
L654 OPERATIONALLY CHECK SLAT SYSTEMS	-	-	44	-	-	81
H359 REMOVE OR INSTALL TAIL CONES	10	21	-	55	17	81
H373 REMOVE OR INSTALL WING TIPS	32	-	19	23	46	76
I426 OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	-	12	-	-	36	73
L362 INSPECT FLIGHT CONTROL TRIM SYSTEMS	15	23	17	28	51	68

-LESS THAN TEN PERCENT PERFORMING

## TASK FACTOR APPLICATION

As discussed in the INTRODUCTION, task factor booklets were sent to 43172 technicians to obtain training emphasis and difficulty ratings for tasks in the 431X1/X2 inventory. These rating factors were collected for training managers to use in conjunction with percent performing data to help evaluate career ladder documents and ensure training programs are tailored to meet the job requirements of career ladder incumbents.

### Training Emphasis

First-term training emphasis ratings were obtained from 325 Airlift/Bombardment maintenance technicians representing a cross section of 431X2 aircraft systems (see Table 1 for a list of aircraft-specific personnel surveyed). As indicated previously, the training emphasis sample is comprised primarily of individuals assigned to Organizational Maintenance Squadrons. Raters, therefore, normally place greater emphasis on training tasks applicable to flightline or inspection functions than to repair and reclamation or other shop-related tasks. Since respondents provided training emphasis ratings for tasks which are appropriate for the aircraft they maintain, data are valuable in assessing both common training requirements and aircraft-specific training needs.

Table 5 presents those tasks rated highest in training emphasis by 43172 respondents. Tasks in this list are typical of many functions which flightline maintenance personnel perform. Respondents placed highest training emphasis on annotating general maintenance forms, such as AFTO Forms 781A/H/K and 349. They also placed high emphasis on training common maintenance functions involving ground movement of aircraft, servicing and inspecting aircraft systems and components, and operating aerospace ground equipment (AGE). Because of the high training emphasis and percent performing data, tasks such as those listed in Table 5 provide examples of functions which should be covered in the Phase I Able Chief course at Sheppard TTC.

In contrast with the general functions covered above, tasks in Table 6 are rated below average (mean = 1.72) in training emphasis by the composite group of respondents and are performed by fewer incumbents. In many Air Force specialties, training managers designate tasks such as those in Table 6 as OJT items. However, a more detailed analysis of these tasks revealed that some are aircraft or job-specific functions which may be trained more effectively in the FTD environment. For example, data in the ANALYSIS OF FIRST-ENLISTMENT AIRCRAFT GROUPS section showed that many B-52 respondents perform drag chute and bomb bay door functions; that KC-135 personnel inspect refueling booms; and that many C-130 personnel inspect propellers. Other tasks, such as remove or install primary flight control surfaces or flight control cables, normally are repair and reclamation functions.

By reviewing aircraft-specific percent performing and training emphasis data, training personnel can readily identify many of the unique aircraft tasks mentioned above. For instance, OSR data reveal that 82 percent of the first-term B-52 maintenance respondents remove or install drag chutes, while

70 percent reported they remove or install bomb bay doors. Training emphasis ratings by the B-52 subject-matter experts for these tasks were 5.76 and 6.79, respectively. This information indicates that these types of tasks may be trained more appropriately during Phase II Able Chief training. Before making a final decision, however, the trainer should also consider the difficulty rating of each task to determine the most appropriate training method.

### Task Difficulty

Tables 5 and 6 also contain difficulty ratings for tasks discussed in the previous section. As seen in Table 5, all of the tasks rated highest in training emphasis are average or below average (mean = 5.0) in task difficulty. These tasks are some of the more typical functions which maintenance personnel perform, and raters apparently perceive them as requiring less time to learn than many other maintenance functions, especially those involving management, supervision, and repair and reclamation functions. In fact, data indicate that some tasks, such as grounding aircraft, operating maintenance stands, and walking wings or tail during towing operations, should require little time for individuals to learn. Although tasks like these could be trained effectively through OJT, the large number of personnel performing and the broad job scope which maintenance personnel must learn could create major training problems for flightline personnel if they had to provide the appropriate training. To preclude this kind of training problem, resident school instructors may be able to provide knowledge or team participation training on tasks with low difficulty to help minimize training time on the individuals' subsequent assignment.

Some of the tasks listed in Table 6 have average to high difficulty ratings. Most of these tasks involve repair and reclamation functions, such as adjusting aircraft components, removing and installing aircraft components, and isolating system malfunctions. Since high difficulty ratings are typical of many aircraft repair and reclamation tasks, learning the job may consume a lot of training time. Because aircraft repair and reclamation personnel need to learn both systems knowledge and task performance, FTDs could provide the required training if the student flow can adequately justify such training.

TABLE 5

## TASKS RATED HIGHEST IN TRAINING EMPHASIS

TASKS	AFSC 431X2 TRAINING EMPHASIS	TASK DIFFICULTY	AFSC 431X2 FIRST-TERM PERCENT PERFORMING
E133 ANNOTATE AEROSPACE VEHICLE FLIGHT STATUS AND MAINTENANCE DOCUMENT (AFTO FORM 781H)	7.09	4.18	56
E150 ANNOTATE MAINTENANCE DATA COLLECTION RECORD (AFTO FORM 349)	7.04	4.36	60
E135 ANNOTATE AFTO FORM 781K, AEROSPACE VEHICLE INSPECTION, ENGINE DATA, CALENDAR ITEM INSPECTION AND DELAY DISCREPANCY DOCUMENT	7.03	3.99	58
E151 ANNOTATE MAINTENANCE DISCREPANCY AND WORK DOCUMENT (AFTO FORM 781A)	6.94	4.08	53
I410 MARSHAL AIRCRAFT	6.94	2.94	68
I447 SERVICE TIRES	6.83	3.09	69
I402 FUEL AIRCRAFT USING SINGLEPOINT REFUELING METHODS	6.80	4.68	69
I438 SERVICE ENGINE OIL	6.77	2.52	70
J485 INSPECT TIRES	6.72	3.74	73
I439 SERVICE HYDRAULIC SYSTEMS	6.69	2.73	66
I449 TAKE ENGINE OIL SAMPLES	6.68	3.09	66
I403 GROUND AIRCRAFT	6.65	2.15	70
E134 ANNOTATE AEROSPACE VEHICLE-ENGINE FLIGHT (AFTO FORM 781J)	6.65	2.15	70
H281 LUBRICATE AIRCRAFT COMPONENTS	6.55	4.21	64
I422 OPERATE MAINTENANCE STANDS	6.54	2.28	76
H234 INSPECT ACCESS PANELS	6.50	3.79	70
I450 WALK WINGS OR TAIL DURING TOWING OPERATIONS	6.42	1.95	73
I391 DEFUEL AIRCRAFT USING SINGLEPOINT METHODS	6.38	4.86	64
I425 OPERATE PORTABLE LIGHTING EQUIPMENT	6.33	3.01	73
I441 SERVICE OXYGEN SYSTEMS WITH LIQUID OXYGEN	6.28	4.45	57
H239 INSPECT AIRFRAME STRUCTURES	6.24	5.01	58
H237 INSPECT AIRCRAFT EMERGENCY EQUIPMENT FOR AVAILABILITY, SUCH AS FIRST AID KITS, TOOLS, OR FIRE EXTINGUISHERS	6.18	3.38	60
I431 POSITION AEROSPACE GROUND EQUIPMENT (AGE) TO AIRCRAFT	6.15	2.74	66
I412 OPERATE AIR COMPRESSORS	6.13	3.46	54
E131 ANNOTATE AEROSPACE VEHICLE FLIGHT DATA DOCUMENT (AFTO FORM 781)	6.06	4.08	43
H303 REMOVE OR INSTALL ACCESS PANELS	6.02	3.11	65
I424 OPERATE PORTABLE GENERATORS	6.01	3.44	58
H257 INSPECT SEATS, SEATBELTS, INERTIAL REELS, OR SHOULDER HARNESSSES	6.01	3.70	55
I418 OPERATE GROUND HEATERS	5.99	3.56	63
N768 REMOVE OR INSTALL BATTERIES	5.99	3.68	59

TABLE 6

## EXAMPLES OF TASKS RATED BELOW AVERAGE IN TRAINING EMPHASIS

TASKS*	AFSC 431X2 TRAINING EMPHASIS+	TASK DIFFICULTY	AFSC 431X2 FIRST-TERM PERCENT PERFORMING
H259 INSPECT SIDE CARGO DOOR SYSTEMS	1.68	4.52	19
H227 BRIGHTEN AIRCRAFT SURFACES	1.65	3.44	20
H207 ADJUST AIR DEFLECTOR DOOR COMPONENTS	1.63	5.21	9
H306 REMOVE OR INSTALL AFT CARGO DOORS OR RAMPS	1.63	6.01	11
L680 REMOVE OR INSTALL PRIMARY FLIGHT CONTROL SURFACES	1.62	6.10	9
I433 REMOVE OR INSTALL DRAG CHUTES	1.59	4.45	18
K593 REMOVE OR INSTALL GASEOUS OXYGEN BOTTLES	1.55	4.37	19
J494 ISOLATE LANDING GEAR STEERING SYSTEM MALFUNCTIONS	1.44	6.27	8
P820 MAINTAIN NITROGEN SERVICING CARTS	1.33	4.12	2
H315 REMOVE OR INSTALL BOMB BAY DOORS	1.30	4.67	13
Q849 PICK UP OR DELIVER -21 SUPPORT EQUIPMENT	1.08	2.64	5
L617 ADJUST FLIGHT CONTROL LOCKING MECHANISMS	1.07	6.02	6
X1028 INSPECT IFR BOOMS	.99	4.57	13
R888 INSPECT PROPELLERS	.77	4.33	8
H273 ISOLATE DRAG CHUTE SYSTEM MALFUNCTIONS	.74	5.97	5
W1019 ISOLATE ADS RAIL MALFUNCTIONS	.53	5.40	2
H375 REMOVE OR INSTALL WINGS	.39	8.14	2
J477 INSPECT LANDING GEAR SKI SYSTEMS	.30	4.93	2
J453 ADJUST LANDING GEAR CROSSWIND CRAB SYSTEM COMPONENTS	.29	6.65	3

\*EXCLUDING NORMAL SUPERVISORY, MANAGERIAL, OR TRAINING TASKS

+AVERAGE TRAINING EMPHASIS = 1.72

## ANALYSIS OF TRAINING DOCUMENTS

Since occupational survey data are gathered from career ladder incumbents, it provides an excellent source of information which training managers can use to determine if the 431X2 Specialty Training Standard (STS) and the 431X1/X2 Plan of Instruction (POI 3AQR431X1/X2) are comprehensive and accurate. It is essential that these training documents reflect actual utilization patterns because of the impact they have on preparing incumbents to perform their jobs.

To facilitate the use of survey and task factor data (training emphasis and task difficulty ratings), subject-matter experts at Sheppard AFB matched 431X2 survey tasks to related STS items and to applicable POI objectives. Computerized matchings, called FACPRINTs (FCP), were then made for the STS and the POI, pairing percent performing and task factor data for each task to the respective STS item(s) or POI objective. Unmatched survey tasks are presented in the "tasks not referenced" section of each STS or POI FACPRINT to help identify possible additional STS or POI requirements. The basic 431X2 Training Extract (Attachment 1) provides a combination of STS and POI FACPRINTs containing information for various TAFMS, DAFSC, and aircraft groups which managers can use to assess training requirements and determine how to more effectively use training resources.

### Specialty Training Standard

An analysis of data associated with matched and unmatched tasks for STS 431X2 indicate good overall coverage of most functions which airlift/bombardment personnel perform. A review of the data did reveal, however, that non-powered aerospace ground equipment (AGE) and -21 support equipment activities may not be covered adequately in the STS. Although a small percentage of maintenance incumbents perform tasks such as maintain hydraulic and nitrogen servicing carts, or maintain cargo compartment seats or litters, the June 1981 OSR for the Aircraft Maintenance specialties clearly identified distinct non-powered AGE and -21 Support Equipment job groups. Because of the unique tasks these groups perform, the STS should possibly place specific emphasis on the maintenance of non-powered AGE and -21 support equipment.

In addition to using survey data to evaluate what 431X2 functions require training, managers should also review task data to determine when and how to administer training. Table 7 presents tasks matched to STS items which are currently being trained to Phase I Able Chief students. Survey data indicate, however, that small percentages of incumbents actually perform the related tasks. In fact, many of these tasks, especially those involving wheel and tire and flight control systems, are typically specialist functions. The fact that these are special functions may be one reason 43172 technicians did not rate the tasks high in training emphasis. When evaluating STS items such as those above, career ladder managers may find other training methods more appropriate to help prepare individuals for their jobs.

Training managers can also use aircraft-specific percent members performing and training emphasis data to assess what types of functions Phase II Able Chief course instructors should train. Survey data can help identify what STS items are applicable to each aircraft system as well as provide specific tasks which instructors should train.

#### Plan of Instruction

The Training Extract also contains a computer printout which matches 431X2 task data to relevant objectives in POI 431X1/X2. This product presents information on training emphasis and task difficulty ratings as well as first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) personnel.

Analysis of the data for tasks matched to many POI objectives indicates that 431X2 incumbents are receiving training on some tasks which a relatively small portion of the respondents actually perform. As seen in Table 8, which contains tasks matched to POI objectives, low percentages of first-term 431X2 respondents indicated they operationally check fuel tank feed systems, flight control trim systems, air-conditioning systems, and nitrogen servicing carts. Inspection tasks involving wheel bearings, engine fuel controls, and flight control locking mechanisms were also items which few perform. Other tasks such as those involving cargo compartment pressure doors, drag chutes, bomb bay doors, and ejection systems are peculiar to one or more 431X2 aircraft types, but not to all. Although these tasks are relevant to 431X2 jobs, training managers should review task data to determine if training these types of tasks through FTD or OJT programs might make more effective use of time and resources.

In contrast with the above functions, some 431X2 tasks not referenced to the POI deserve consideration for possible inclusion in the Phase I course. Tasks listed in Table 9 are rated high in training emphasis, are performed by more than 30 percent of the first-enlistment respondents, and are applicable to most airlift/bombardment aircraft. When considering these tasks for Phase I training, course managers should ask themselves if training benefits both 431X1 and 431X2 personnel since they receive common training in the technical school at Sheppard AFB. Table 10 presents a listing of representative tasks which are not typical of both AFSCs. Deviations in percent performing and training emphasis data on some tasks, such as operationally checking canopies or crew entrance doors, are a function of general differences in aircraft systems. Because of the general nature of Phase I training, course developers should emphasize common functions to make the curriculum more relevant to as many students as possible.

TABLE 7

STS AREAS TO REVIEW FOR EFFECTIVENESS OF PHASE I TRAINING  
(PERCENT PERFORMING)

D TSK	TITLES	AFSC 431X2 TRAINING EMPHASIS*	AFSC 431X2 FIRST JOB	AFSC 431X2 FIRST ENLISTMENT	43152	43172	TASK DIFFICULTY**
112	14C. PERFORM OPERATIONAL CHECKS OF LANDING GEAR						
J 500	OPERATIONALLY CHECK LANDING GEAR INDICATOR SYSTEMS	2.31	14.3	15.2	17.7	14.4	4.79
J 499	OPERATIONALLY CHECK LANDING GEAR EXTENSION OR RETRACTION MECHANISM	2.12 .68	17.2 1.8	16.3 2.9	18.4 3.9	15.3 2.9	5.14 5.40
J 501	OPERATIONALLY CHECK LANDING GEAR KNEELING SYSTEMS						
141	16E(1). PERFORM OPERATIONAL CHECK OF ANTISKID SYSTEM						
J 496	OPERATIONALLY CHECK ANTISKID SYSTEMS	2.65	10.8	14.6	17.7	13.7	4.94
148	16H(1). REMOVE BRAKE ASSEMBLIES						
J 508	REMOVE OR INSTALL BRAKE ASSEMBLIES	3.00	21.4	19.7	21.9	16.1	4.90
149	16H(2). REMOVE WHEEL AND TIRE ASSEMBLIES						
J 531	REMOVE OR INSTALL WHEEL ASSEMBLIES	3.40	21.8	21.2	23.3	18.7	4.58
179	18F. REMOVE FLIGHT CONTROL SYSTEM COMPONENTS SUCH AS SURFACES AND ACTUATORS						
L 637	INSTALL OR REMOVE FLIGHT CONTROL RIG PINS	2.47	11.3	12.8	14.8	12.6	4.10
L 664	REMOVE OR INSTALL FLAPS	2.41	15.2	18.9	20.5	14.7	5.91
L 679	REMOVE OR INSTALL GUST LOCKS	1.84	7.9	7.6	8.7	7.7	4.44
L 680	REMOVE OR INSTALL PRIMARY FLIGHT CONTROL SURFACES	1.62	8.4	8.4	10.6	9.2	6.10
241	26D. INSTALL DRAG CHUTE						
J 433	REMOVE OR INSTALL DRAG CHUTES	1.59	18.3	17.8	15.2	11.0	4.45

\*MEAN TRAINING EMPHASIS (TE) = 1.72

\*\*MEAN TASK DIFFICULTY (TD) = 5.00

TABLE 8

TASKS MATCHED TO POI 3AQR431X1/X2 WHICH FEW AFS 431X2 RESPONDENTS PERFORM  
(LESS THAN 30 PERCENT PERFORMING)

TASKS	TRAINING EMPHASIS*	TASK DIFFICULTY**	PERCENT 431X2 MEMBERS PERFORMING	
			FIRST JOB	FIRST ENLISTMENT
J531 REMOVE OR INSTALL WHEEL ASSEMBLIES	3.40	4.58	22	21
N774 SERVICE BATTERY SUMP JARS	3.31	2.56	20	19
O794 OPERATIONALLY CHECK FUEL TANK FEED SYSTEMS	3.17	4.44	16	20
J532 SERVICE BRAKE SYSTEMS	3.05	4.16	18	18
J508 REMOVE OR INSTALL BRAKE ASSEMBLIES	3.00	4.90	21	20
L652 OPERATIONALLY CHECK FLIGHT CONTROL TRIM SYSTEMS	3.00	4.82	24	24
K573 OPERATIONALLY CHECK BLEED AIR SYSTEMS	2.82	4.76	20	21
H288 OPERATIONALLY CHECK CARGO COMPARTMENT PRESSURE DOORS	2.76	4.90	21	24
J487 INSPECT WHEEL BEARINGS	2.64	4.19	20	18
M720 OPERATIONALLY CHECK HYDRAULIC SYSTEM VALVES	2.64	4.82	11	15
K569 OPERATIONALLY CHECK AIR-CONDITIONING SYSTEMS	2.62	4.84	11	14
N773 SERVICE BATTERIES	2.55	3.16	11	11
P829 OPERATIONALLY CHECK NITROGEN SERVICING CARTS	2.45	3.94	7	10
L664 REMOVE OR INSTALL FLAPS	2.41	5.91	15	19
M387 SERVICE PNEUDRAULIC SYSTEM ACCUMULATORS	2.39	3.90	14	14
J461 BLEED BRAKE SYSTEMS	2.30	4.43	28	25
J503 OPERATIONALLY CHECK LANDING GEAR STEERING SYSTEMS	2.26	5.02	11	11
K577 OPERATIONALLY CHECK OXYGEN FEED SYSTEMS	2.12	4.26	12	13
N769 REMOVE OR INSTALL FUSES OR CURRENT LIMITERS	2.11	3.26	14	15
R878 INSPECT ENGINE FUEL CONTROLS	1.98	4.55	8	8
L639 INSPECT FLIGHT CONTROL LOCKING MECHANISMS	1.91	4.92	8	10
I433 REMOVE OR INSTALL DRAG CHUTES	1.59	4.45	18	18
K561 INSPECT WINDSHIELD DEFOG SYSTEMS	1.58	4.02	7	8
H246 INSPECT DRAG CHUTE SYSTEMS	1.52	4.91	13	14
H242 INSPECT BOMB BAY DOOR SYSTEMS	1.31	4.91	9	11
H247 INSPECT EJECTION SYSTEMS	1.25	5.74	9	10
E169 ANNOTATE SYSTEM/EQUIPMENT STATUS RECORD (AFTO FORM 244)	.51	4.55	3	5

\*MEAN 431X2 TRAINING EMPHASIS = 1.72

\*\*MEAN 431X2 TASK DIFFICULTY = 5.0

TABLE 9

AFS 431X2 TASKS NOT REFERENCED TO 3AQR431X1/X2 PO1 OBJECTIVES  
(30 PERCENT OR MORE PERFORMING)

TASKS	TRAINING EMPHASIS	TASK DIFFICULTY	FIRST JOB	FIRST ENLISTMENT
H237 INSPECT AIRCRAFT EMERGENCY EQUIPMENT FOR AVAILABILITY, SUCH AS FIRST AID KITS, TOOLS, OR FIRE EXTINGUISHERS	6.18	3.38	63	60
I448 STAND FIREGUARD	5.94	1.52	72	69
I413 OPERATE AIRCRAFT COCKPIT CONTROLS DURING TOWING OPERATIONS	5.78	3.71	55	53
I393 DIRECT FUELING OR DEFUELING OPERATIONS	5.52	5.33	32	43
I414 OPERATE AIRCRAFT RADIOS	5.47	3.71	44	48
R917 REMOVE OR INSTALL ENGINE COWLING LATCHES	5.31	4.03	39	44
O799 PREPARE AIRCRAFT FOR FUEL CELL MAINTENANCE	5.13	4.81	38	42
R853 ADJUST ENGINE COWLING LATCHES	5.06	4.14	38	41
H289 OPERATIONALLY CHECK CREW ENTRANCE DOOR SYSTEMS	5.01	4.45	49	50
H352 REMOVE OR INSTALL SEATBELTS OR SHOULDER HARNESSSES	4.92	3.28	35	38
H260 INSPECT SLIDING WINDOW MECHANISMS	4.91	3.98	34	40
H353 REMOVE OR INSTALL SEATS OTHER THAN EJECTION SEATS	4.91	3.98	34	40
H205 ADJUST ACCESS DOOR OR HATCH LINKAGE OR LATCHING MECHANISMS	4.69	5.29	45	48
I434 REMOVE SNOW OR ICE FROM AIRCRAFT MANUALLY	4.68	3.67	35	42
H347 REMOVE OR INSTALL RADOMES	4.62	4.57	42	42
H302 REMOVE OR INSTALL ACCESS DOOR OR HATCH PRESSURE SEALS	4.44	4.84	37	38
I435 REMOVE SNOW OR ICE FROM AIRCRAFT USING AGE	4.42	3.87	30	35
H255 INSPECT RELIEF FACILITIES	4.31	3.41	33	36
H328 REMOVE OR INSTALL CREW ENTRANCE DOORS	4.20	5.07	32	35
H301 REMOVE OR INSTALL ACCESS DOOR OR HATCH LINKAGE OR LATCHING MECHANISM COMPONENTS	4.13	5.13	33	55
H570 OPERATIONALLY CHECK APUs, EPUs, OR GTCs	3.89	3.71	31	34
O776 DRY-DRAIN FUEL TANKS	3.87	3.75	31	33
K554 INSPECT FIRE EXTINGUISHER OR SUPPRESSION SYSTEMS	3.84	4.04	38	40
H220 ADJUST SEAT LOCKING MECHANISMS	3.72	4.68	33	34
L649 OPERATIONALLY CHECK FLAP SYSTEMS	3.61	4.64	36	39
H251 INSPECT LIFE RAFT STOWAGE	3.55	4.14	35	32

TABLE 10

AFS 431X1 OR 431X2 TASKS FOR PHASE I TRAINING  
(PERCENT MEMBERS PERFORMING)

TASKS	FIRST-ENLISTMENT PERSONNEL			TRAINING EMPHASIS	
	431X1	431X2	DIFFERENCE	431X1*	431X2**
+H287 OPERATIONALLY CHECK CANOPIES	57	2	55	5.29	.18
+H243 INSPECT CANOPY SYSTEMS	51	4	47	5.53	.34
I394 DIRECT JACKING OPERATIONS	58	13	45	6.23	2.83
I395 DIRECTING TOWING OPERATIONS	57	17	40	6.40	4.08
+J508 REMOVE OR INSTALL BRAKE ASSEMBLIES	55	20	35	6.10	3.00
+J465 INSPECT ARRESTING GEAR SYSTEMS	39	5	34	2.91	.27
+M740 SERVICE TAIL HOOKS	34	1	33	2.29	.08
O801 REMOVE OR INSTALL EXTERNAL FUEL TANKS	40	9	31	4.50	1.25
I421 OPERATE HYDRAULIC TEST STANDS	45	16	29	5.15	2.05
J496 OPERATIONALLY CHECK ARRESTING GEAR SYSTEMS	31	2	29	2.62	.20
I426 OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	41	14	27	6.28	3.15
+J532 SERVICE BRAKE SYSTEMS	43	18	25	5.22	3.05
H247 INSPECT EJECTION SYSTEMS	35	10	25	4.77	1.25
H289 OPERATIONALLY CHECK CREW ENTRANCE DOOR SYSTEMS	9	50	-41	.34	5.01
+R875 INSPECT ENGINE COWLING LATCHES	12	51	-39	1.48	5.72
+R918 REMOVE OR INSTALL ENGINE COWLINGS	14	52	-38	1.74	5.56
H260 INSPECT SLIDING WINDOW MECHANISMS	4	40	-36	.18	4.91
R853 ADJUST ENGINE COWLING LATCHES	7	41	-34	.95	5.06
R917 REMOVE OR INSTALL ENGINE COWLING LATCHES	9	43	-34	1.20	5.31
+H245 INSPECT CREW ENTRANCE DOOR SYSTEMS	12	46	-34	.59	5.37
H353 REMOVE OR INSTALL SEATS OTHER THAN EJECTION SEATS	12	44	-32	1.19	4.84
H328 REMOVE OR INSTALL CREW ENTRANCE DOORS	4	35	-31	.35	4.20
+H282 OPERATIONALLY CHECK AFT CARGO DOORS OR RAMPS	4	33	-29	.15	3.25
H251 INSPECT LIFE RAFT STOWAGE	4	32	-28	.14	3.55
H255 INSPECT RELIEF FACILITIES	9	36	-27	.72	4.31
K604 SERVICE APUs, EPUs, OR GTCs	8	34	-26	1.24	3.89
K554 INSPECT FIRE EXTINGUISHER OR SUPPRESSION SYSTEMS	14	40	-26	1.65	3.84

+TASKS MATCHED TO 3AQR431X1/X2

\*MEAN 431X1 TRAINING EMPHASIS = 1.54 (ONE STANDARD DEVIATION ABOVE MEAN = 3.23)

\*\*MEAN 431X2 TRAINING EMPHASIS = 1.72 (ONE STANDARD DEVIATION ABOVE MEAN = 3.38)

## DISCUSSION

The aircraft-specific training emphasis ratings reported in this study were collected to help Air Force decision makers address the very complex training needs of the Airlift/Bombardment Aircraft Maintenance career field. The training emphasis data were compared with occupational information from the June 1981 Aircraft Maintenance OSR to review the present training programs.

One important area which deserves attention is the Phase I course at STTC. Although survey data indicate both AFSC 431X1 and 431X2 first-term personnel perform many common functions, other tasks which are primarily relevant to one of these AFSCs could also be taught effectively during the initial training period if equipment and facilities were available. Since these tasks are not relevant to both specialties, however, they normally are inappropriate for a combined 431X1 and 431X2 course. Therefore, course development specialists should review survey data to determine if enough differences exist to warrant some type of channelized training. If this training is applicable, a possible alternative might be to continue using the current Phase I course curriculum and add additional instructional time to accomplish channelized training requirements. Another would be to remove AFSC-specific training from the Phase I course.

A second area of concern is the use of Able Chief graduates in non-flightline jobs. For example, Able Chief students who are initially assigned to either a support equipment or an aircraft repair and reclamation section may not have opportunity to use their initial training. If supervisors continue to assign apprentice aircraft maintenance personnel to non-flightline maintenance sections, such as repair and reclamation or inspection, alternate initial training programs may need to be developed. Because of the flexibility maintenance supervisors have in using their personnel, it is also important to ensure follow-on FTD or OJT training programs are tailored specifically to meet job requirements.

Because of the size and complex nature of the 431X2 specialty, a Utilization and Training Conference may be necessary to assess current and projected training needs and programs. Occupational survey data, when matched to the revised 431X2 STS, can provide a common data base for conference participants to use when discussing training and utilization issues. Through this coordination process, managers can develop a fully integrated training system.

**DATE**  
**ILME**